

FUTURE FISHERIES IMPROVEMENT PROGRAM GRANT APPLICATION

Please fill in the highlighted areas
all sections (IA, IB, IC, etc.) must be addressed or the application will be considered invalid

I. APPLICANT INFORMATION

- A. Applicant Name: Montana DNRC-Forest Management Bureau
- B. Mailing Address: 2705 Spurgin Road
- C. City: Missoula State: MT Zip: 59804
- Telephone: 406-542-4232 E-mail: michaelanderson@mt.gov
- D. Contact Person: Mike Anderson
- Address if different from Applicant: Same as above
- City: State: Zip:
- Telephone: E-mail:
- E. Landowner and/or Lessee Name (if other than Applicant): Same as above
- Mailing Address:
- City: State: Zip:
- Telephone: E-mail:

II. PROJECT INFORMATION*

- A. Project Name: Cottonwood Creek Irrigation Diversion Repair
- River, stream, or lake: Cottonwood Creek
- Location: Township: 16N Range: 14W Section: 24
- Latitude: 47.123296 Longitude: -113.306745 *within project (decimal degrees)*
- County: Missoula
- B. Purpose of Project:

The purpose of this project is to construct an artificial log jam structure at an existing abandoned irrigation point of diversion. The diversion point does not currently have a control structure and is likely entraining Bull trout and Westslope Cutthroat trout into the ditch system which does not have a downstream reconnection with Cottonwood Creek. Additionally, restoration of natural conditions at this diversion point will minimize the potential of a channel avulsion which would bypass an existing fish screen approximately 200 m downstream from the site.

C. Brief Project Description:

The project location is the irrigation point of diversion (POD) on the James Ditch, approximately 10 miles southeast of Seeley Lake (Figure 1). Based on review of water rights documents associated with the POD, associated water rights were moved downstream to another POD with a fish screen constructed by FWP in the late 1990's. The original POD was a rock-gabion wall with a 24" CMP and sliding metal head gate embedded in the structure. Currently, the water users who maintained this POD are receiving water from the FWP ditch system, rendering the failed structure that is the focus of this project obsolete.

During spring runoff in April and May 2018, which was exacerbated by increased water yield from the Rice Ridge Fire (Sylte et al. 2017) and high snowpack conditions, the structure failed resulting in uncontrolled discharge from Cottonwood Creek going into the ditch system. When the gabion wall failed, a portion of the structure was displaced into Cottonwood Creek resulting in a channel constriction that decreased the active channel width by approximately 50%. The constriction resulted in approximately 20-30% of the peak and 10% of the baseflow discharge being diverted into the ditch system (Figure 2). Due to the volume of diverted discharge and the local stream morphology, there is a high likelihood that migrating Bull Trout and Westslope Cutthroat Trout are being entrained in the ditch system, which does not have a downstream connection to Cottonwood Creek. Stream surveys conducted in August 2018 evaluated local geomorphology to establish baseline conditions were completed by Montana DNRC (Figure 3). Based on the survey, several factors appear to have led to the avulsion processes observed at the site. The gabion basket constriction in concert with high discharge have led to formation of a point bar on the streambank adjacent to the point of diversion (Figures 4 and 5). Formation of the point bar in addition to the gabion basket constriction have forced Cottonwood Creek toward the irrigation diversion resulting in the channel avulsion into the ditch system. Given the topography of the terrain southeast of the diversion structure and the volume of water being diverted into the ditch system, there is a strong likelihood that further channel avulsion will occur, potentially abandoning the current channel in Cottonwood Creek. Channel abandonment would result in a significant adverse impact to all fish species in Cottonwood Creek as the stream develops a new channel and establishes a reconnection downstream. Channel abandonment would also render the FWP fish screen ineffective as the majority of Cottonwood Creek discharge would be in a channel that bypasses the screened diversion. Additional impacts to infrastructure would occur in this instance including; local flooding on Woodworth Road impacting access, potential flooding of a power substation on Woodworth Road, and private and state government infrastructure.

During December 2018, the channel constricting portion of the gabion basket wall will be removed, and a temporary berm will be constructed to minimize further avulsion processes during winter 2018-2019 and spring runoff in 2019.

Project activities that would be included under grant funding as a part of this grant application would include: The proposed project would construct an artificial log jam structure at the existing point of diversion in Cottonwood Creek (Figure 6).

1. Removal of the temporary berm constructed in December 2018
2. Removal of the remaining gabion basket wall
3. Restoration of channel conditions at the diversion to reference conditions upstream, including excavation of the point bar.
4. Construction of the artificial log jam at the existing point of diversion
5. Planting riparian woody shrubs and grasses to stabilize log jam

Project activities would be conducted during summer baseflow conditions, inside the in-stream work window for Bull Trout and Westslope Cutthroat Trout.

D. Length of stream or size of lake that will be treated: Approximately 60 feet

E. Project Budget:

Grant Request (Dollars): \$ 7589.60

Contribution by Applicant (Dollars): \$ 7170.20 In-kind \$ 7170.20

(salaries of government employees are not considered as matching contributions)

Contribution from other Sources (Dollars): \$ None In-kind \$ None

(attach verification - See page 2 budget template)

Total Project Cost: \$ 14,759.80

F. Attach itemized (line item) budget – see template

G. Attach **specific project plans, detailed sketches, plan views, photographs, maps, evidence of landowner consent, evidence of public support and fish biologist support, and/or other information necessary to evaluate the merits of the project. If project involves water leasing or water salvage complete a *supplemental questionnaire*** (fwp.mt.gov/habitat/futurefisheries/supplement2.doc).

H. **Attach land management & maintenance plans that will ensure protection of the reclaimed area.**

III. PROJECT BENEFITS*

A. What species of fish will benefit from this project?:

Bull Trout, Westslope Cutthroat Trout, Mountain Whitefish, Longnose Dace, Brown Trout, Brook Trout

B. How will the project protect or enhance wild fish habitat?:

The project would improve local habitat through the creation of pool habitat following construction of the artificial log jam at the point of diversion. More importantly, elimination of the point of diversion would maintain existing suitable habitat in Cottonwood Creek which may be lost if channel avulsion processes continue to occur.

C. Will the project improve fish populations and/or fishing? To what extent?:

The project would have a net benefit to fish populations in Cottonwood Creek through a variety of mechanisms.

1. Abandonment and restoration of the existing point of diversion would minimize fish entrainment into the James Ditch.
2. Construction of the artificial log jam would prevent further channel avulsion processes, preventing Cottonwood Creek from establishing a new active channel in the James Ditch system. Abandonment of the current channel would likely have a significant adverse impact on fish populations in Cottonwood Creek.
3. Maintaining the active channel of Cottonwood Creek would prevent a downstream fish screen from becoming obsolete. The screen currently decreases fish entrainment into the Dryer Ditch system, benefitting native and wild fish populations in Cottonwood Creek and subsequently the Blackfoot River.

Angling would not be directly impacted by the project.

D. Will the project increase public fishing opportunity for wild fish and, if so, how?:

Not directly, the project would minimize potential channel avulsion which would maintain instream flow in the existing Cottonwood Creek channel.

E. The project agreement includes a 20-year maintenance commitment. Please discuss your ability to meet this commitment.

DNRC is committed to maintaining this structure for the foreseeable future. DNRC has entered into long-term agreements with USFWS under the Habitat Conservation Plan (DNRC HCP 2010) to specifically address potential impacts to Bull Trout and Westslope Cutthroat Trout on HCP covered state trust lands. This includes cumulative watershed effects on fisheries habitat, fisheries habitat connectivity, and sediment delivery commitments. Each of these commitments are extended through the life of the HCP which extends for 50 years.

F. What was the cause of habitat degradation in the area of this project and how will the project correct the cause?:

Habitat degradation in this reach was a result of a failed irrigation diversion structure that altered local stream morphology. The diversion structure has reduced the active channel width of Cottonwood Creek to approximately 10 feet (reference conditions upstream range from 18-25 feet). The channel constriction led to erosion of the gabion basket wall at the diversion point, which ultimately failed, allowing uncontrolled discharge to enter the James Ditch system. Construction of an artificial log-jam structure will eliminate the abandoned point of diversion, prevent further channel avulsion into the ditch system, and minimize fish entrainment into the ditch system.

G. What public benefits will be realized from this project?:

Public benefits realized from this project include:

1. Prevent further channel avulsion which flooded portions of the Woodworth Road in 2018.
2. Minimize flooding near a power substation that occurred in 2018.
3. Maintenance of existing infrastructure on Cottonwood Creek including;
 - a. FWP fish screen on the Dryer Ditch system
 - b. Existing road-stream crossings on Cottonwood Creek that provide access to private residences
 - c. Other irrigation diversions downstream that may be impacted by channel avulsion processes

H. Will the project interfere with water or property rights of adjacent landowners? (explain):

No. The failed point of diversion, which is the focus of this project, was legally changed to an adjacent screened diversion that provides irrigation water to FWP as well as the water user who was responsible for the point of diversion that failed.

I. Will the project result in the development of commercial recreational use on the site?: (explain):

The project will not alter fishing pressure or commercial recreation at this site.

J. Is this project associated with the reclamation of past mining activity?:

No.

Each approved project applicant must enter into a written agreement with Montana Fish, Wildlife & Parks specifying terms and duration of the project. The applicant must obtain all applicable permits prior to project construction. A competitive bid process must be followed when using State funds.

IV. AUTHORIZING STATEMENT

I (we) hereby declare that the information and all statements to this application are true, complete, and accurate to the best of my (our) knowledge and that the project or activity complies with rules of the Future Fisheries Improvement Program.

Applicant Signature:



Date:

11/30/2018

Sponsor (if applicable):

***Highlighted boxes will automatically expand.**

Mail To: Montana Fish, Wildlife & Parks
Fisheries Division
PO Box 200701
Helena, MT 59620-0701

E-mail To: Michelle McGree
mmcgree@mt.gov
(electronic submissions MUST be signed)

Incomplete or late applications will be rejected and returned to applicant.
Applications may be rejected if this form is modified.

*****Applications must be signed and *received* by the Future Fisheries Program Officer in Helena before December 1 and June 1 of each year to be considered for the subsequent funding period.*****

Supplement A: Maps and Figures-Cottonwood Creek Diversion Repair

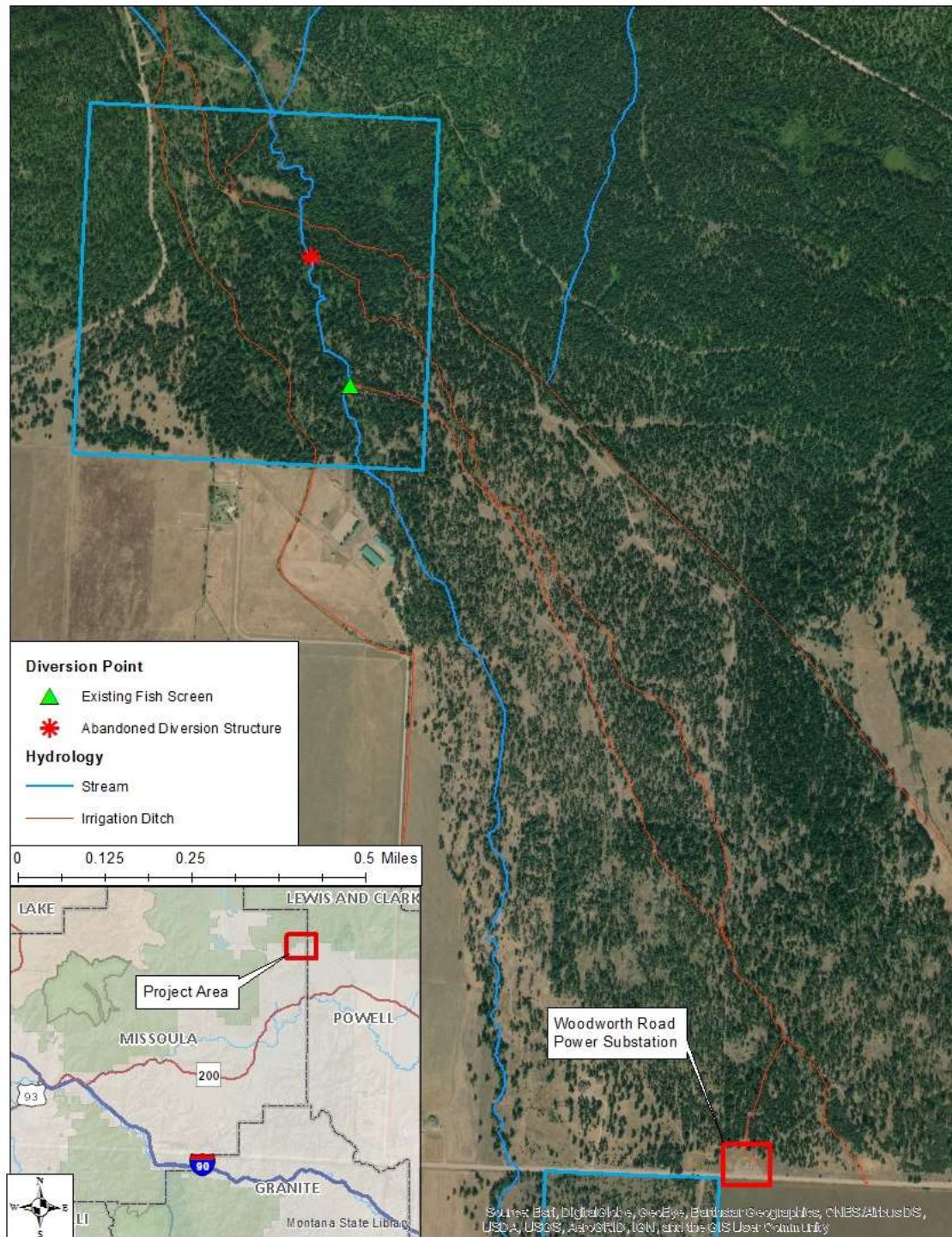


Figure 1: Project area location depicting the abandoned diversion structure to be eliminated by this project and the existing fish screen operated by FWP. Red lines indicate discharge patterns observed during spring runoff during which water flowed around both sides of the power substation on Woodworth Road.



Figure 2: Abandoned irrigation diversion structure during spring runoff in May 2018 (upper pane) and baseflow conditions October 2018 (lower pane)

6 Aug 2018

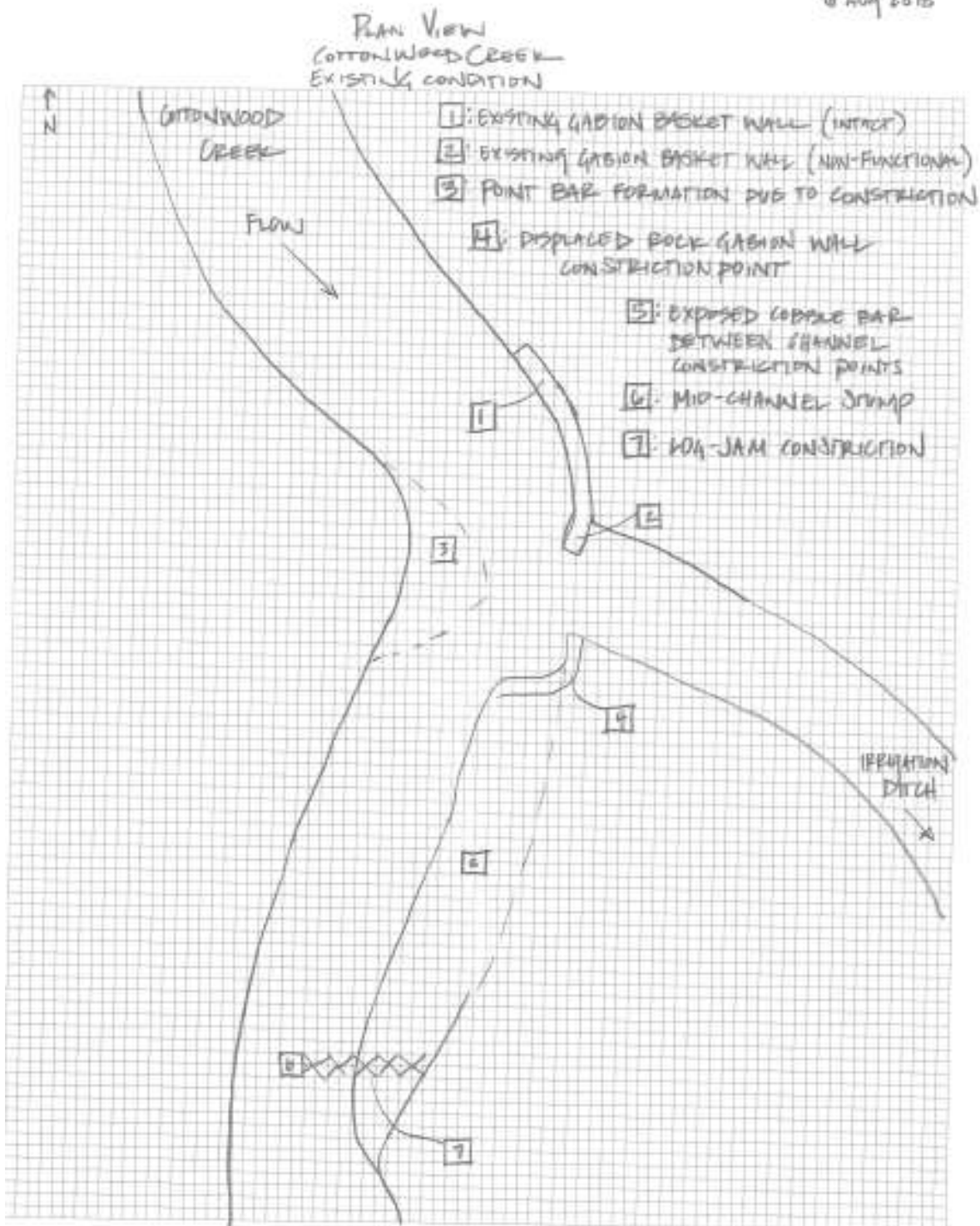


Figure 3: Existing plan view of the project area depicting locations of habitat features.

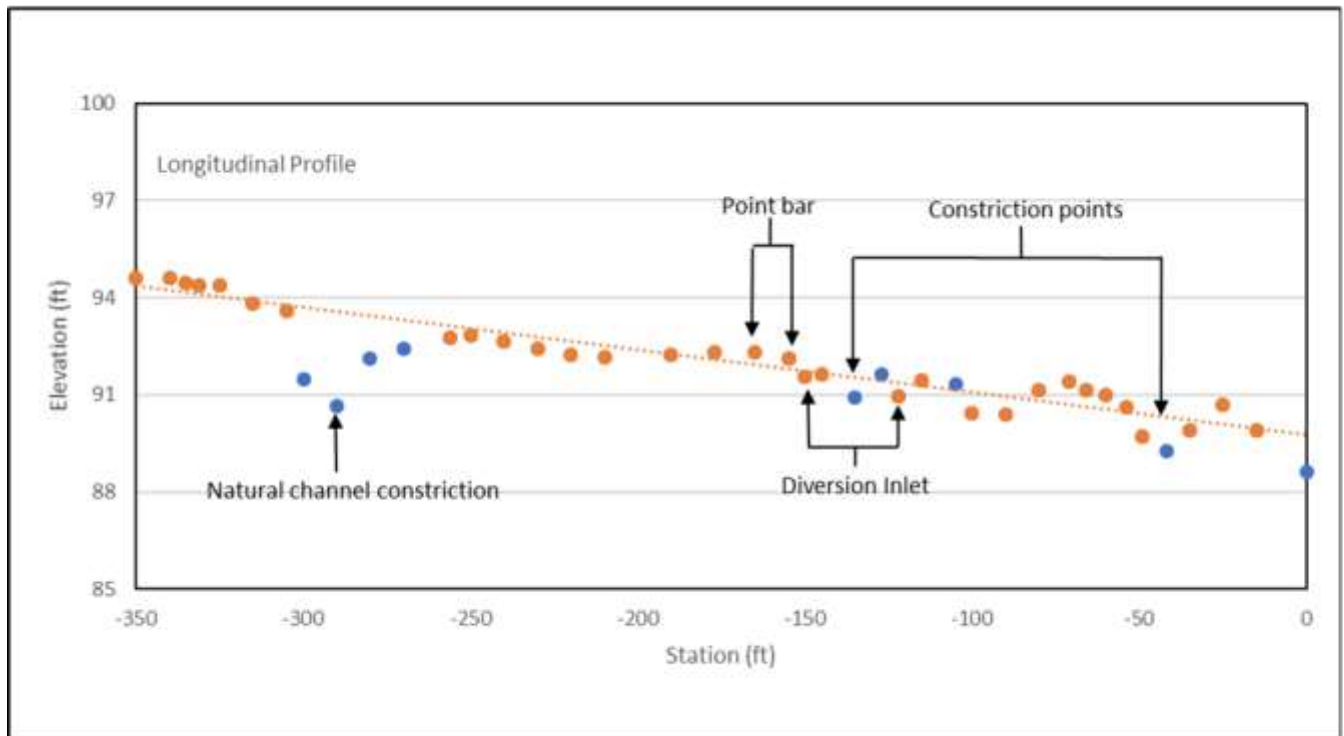


Figure 4: Longitudinal profile of Cottonwood Creek adjacent to the existing diversion structure.

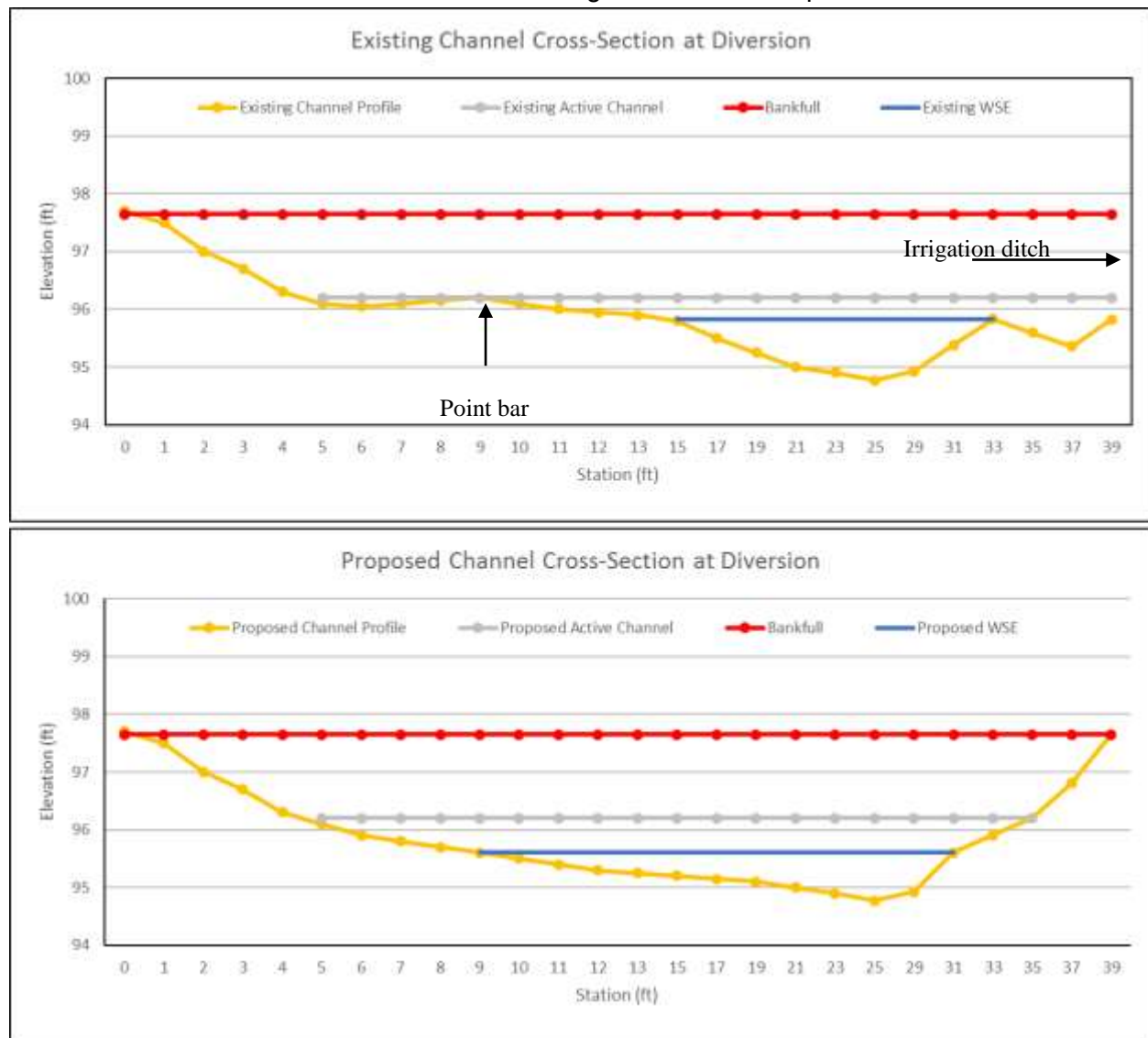


Figure 5: Existing and proposed cross-sectional profile of the Cottonwood Creek stream channel at the abandoned diversion.

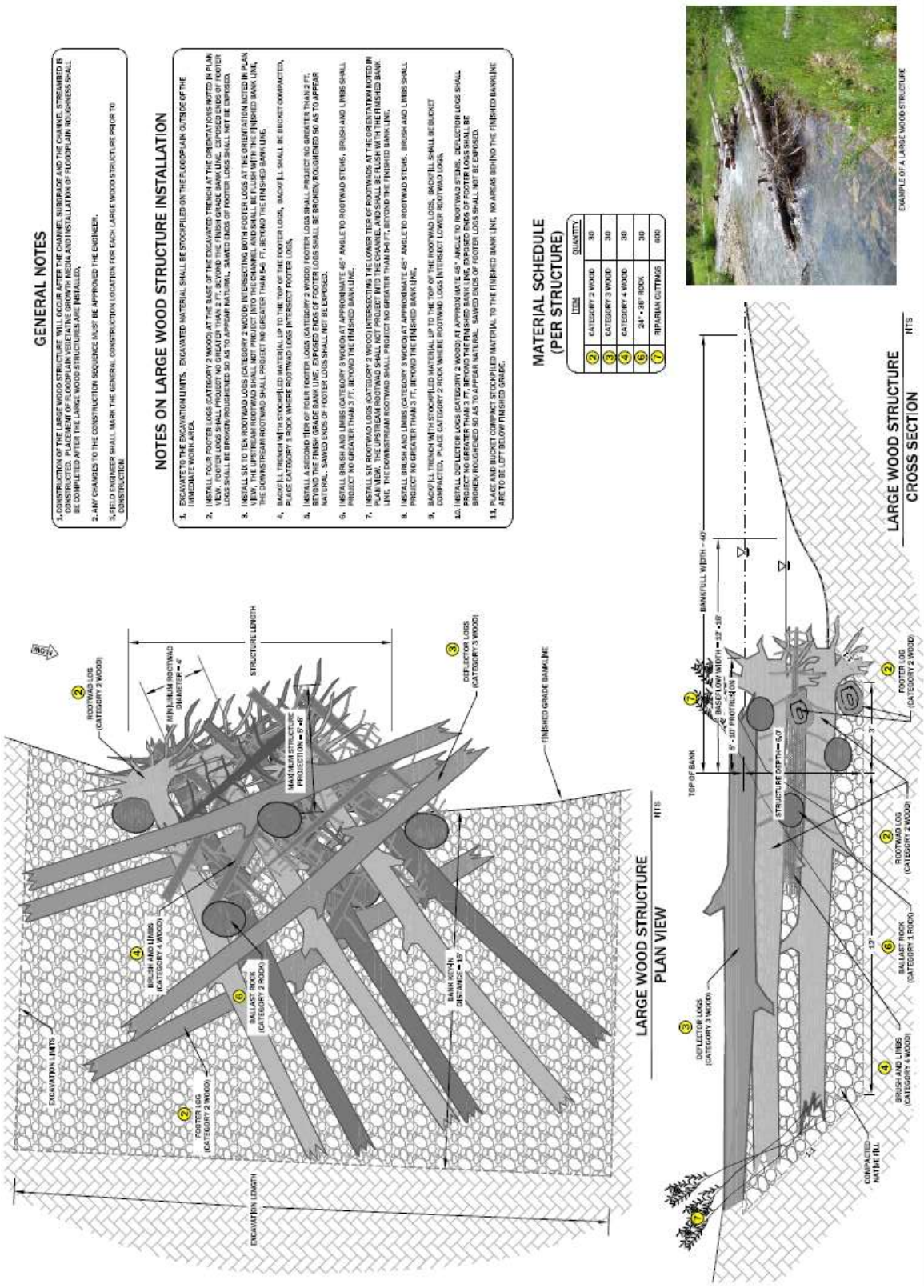


Figure 6: Schematic for the artificial log jam to be constructed at the abandoned point of diversion.

Attachment B: Budget Narrative-Cottonwood Creek Diversion Repair

- Personnel
 - No funding for personnel related costs are requested under this grant proposal. Survey, design, engineering, permitting, and oversight costs will be covered by Montana DNRC operating budgets.
- Travel
 - No funding for travel related costs are requested under this grant proposal. Mileage and per diem will be covered under Montana DNRC operating budgets.
- Construction Materials
 - Future Fisheries Grant Funding
 - Bare root seedlings will be purchased from the Montana DNRC Conservation seedling nursery to revegetate the artificial log-jam structure at the completion of construction.
 - Red-osier dogwood: 400 ea x \$0.78/plant = \$312.00
 - Woods Rose: 50 ea x \$1.08/plant = \$54.00
 - Grass seed mix will be used to revegetate the artificial log jam and reseed any areas of disturbance resulting from equipment access to or at the project site. Seeding rates will be 25 lb/acre with less than 1.0 acres of anticipated areas of disturbance
 - 25 lb/acre x 0.8 acres = 20 lb seed x \$8.18/lb = \$163.60
 - Montana DNRC In-Kind
 - Whole trees including root wads will be harvested from DNRC State Trust Lands adjacent to the project area. An estimated 30 tons of trees (Approximately 40 whole trees) will be harvested to construct the log jam. Based on recent timber sale bid prices in the project area (Cottonwood Park Timber Sale) the In-Kind contribution from Trust Lands is \$1000.20. This is based on the successful bid price received for similar wood products adjacent to the project area.
 - 30-ton x \$33.34/ton = \$1,000.20
 - Log jam ballast rock will be provided by Montana DNRC from an existing rock source on State Trust Lands. Based on prices estimates received from local suppliers was \$47.00/ton.
 - 30-ton x \$47.00/ton = \$1,410.00
- Equipment and Labor
 - Equipment needed to complete this project would be a shared cost between Montana DNRC and Future Fisheries Grant Funding. Log jam ballast rock would be transported to the project site in December 2018 and used to construct the temporary berm to minimize further channel avulsion until construction of the

artificial log jam structure. Materials would be transported to a staging area adjacent to the existing fish screen by a dump truck and mobilized to the project site using an excavator and forwarder. DNRC has obligated funding to deliver and construct the temporary berm at the existing point of diversion. Materials used to construct the temporary berm will be utilized to fill and stabilize the artificial log jam structure during the construction window in July-August 2019.

- Excavator and operator: 60 hours total @ \$115.00/hr = \$6,900.00
 - DNRC portion of excavator and operator time: 20 hours x \$115.00/hr = \$2,300.00
 - Future Fisheries portion of excavator and operator time: 40 hours x \$115.00/hr = \$4,600.00
- Dump truck and operator: 40 hours total @ \$90.00/hr = \$3,600.00
 - DNRC portion of dump truck and operator time: 20 hours x \$90.00/hr = \$1,800.00
 - Future Fisheries portion of dump truck and operator time: 20 hours x \$90.00/hr = \$1,800.00
- Mobilization
 - Equipment will be mobilized to the site at an estimate cost of \$110.00/hr. Costs would be split between Montana DNRC and Future Fisheries funding.
 - December 2018 mobilization (Montana DNRC portion)
 - \$110.00/hr x 6 hours = \$660.00
 - July/August 2019 mobilization (Future Fisheries portion)
 - \$110.00/hr x 6 hours = \$660.00

Cottonwood Creek irrigation diversion repair
BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

002-2019

Both tables must be completed or the application will be returned

WORK ITEMS (ITEMIZE BY CATEGORY)	NUMBER OF UNITS	UNIT DESCRIPTION*	COST/UNIT	TOTAL COST	CONTRIBUTIONS			
					FUTURE FISHERIES REQUEST	IN-KIND SERVICES**	IN-KIND CASH	TOTAL
Personnel***								
Survey				\$ -				\$ -
Design				\$ -				\$ -
Engineering				\$ -				\$ -
Permitting				\$ -				\$ -
Oversight				\$ -				\$ -
				\$ -				\$ -
			Sub-Total	\$ -	\$ -		\$ -	\$ -
Travel								
Mileage				\$ -				\$ -
Per diem				\$ -				\$ -
			Sub-Total	\$ -	\$ -	\$ -	\$ -	\$ -
Construction Materials****								
Bare Root Red-osier Dogwood	400	ea	\$0.78	\$ 312.00	312.00			\$ 312.00
Bare Root Woods Rose	50	ea	\$1.08	\$ 54.00	54.00			\$ 54.00
Grass Seed Mix	20	lb	\$8.18	\$ 163.60	163.60			\$ 163.60
Whole trees for log-jam structure	30	ton	\$33.34	\$ 1,000.20			1,000.20	\$ 1,000.20
Log-jam ballast rock	30	ton	\$47.00	\$ 1,410.00			1,410.00	\$ 1,410.00
				\$ -				\$ -
				\$ -				\$ -
				\$ -				\$ -
				\$ -				\$ -
			Sub-Total	\$ 2,939.80	\$ 529.60	\$ -	\$ 2,410.20	\$ 2,939.80
Equipment and Labor								
Excavator	60	hr	\$115.00	\$ 6,900.00	4,600.00		2,300.00	\$ 6,900.00
Dump Truck	40	hr	\$90.00	\$ 3,600.00	1,800.00		1,800.00	\$ 3,600.00
				\$ -				\$ -
				\$ -				\$ -
				\$ -				\$ -
				\$ -				\$ -
			Sub-Total	\$ 10,500.00	\$ 6,400.00	\$ -	\$ 4,100.00	\$ 10,500.00
Mobilization								
Excavator/Dump Truck	12	hr	\$110.00	\$ 1,320.00	660.00		660.00	\$ 1,320.00
				\$ -				\$ -

Cottonwood Creek irrigation diversion repair
BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

002-2019

				\$ -				\$ -
				\$ -				\$ -
			Sub-Total	\$ 1,320.00	\$ 660.00	\$ -	\$ 660.00	\$ 1,320.00
TOTALS				\$ 14,759.80	\$ 7,589.60	\$ -	\$ 7,170.20	\$ 14,759.80

OTHER REQUIREMENTS:

All of the columns in the budget table and the matching contribution table MUST be completed appropriately or the application will be invalid. Please see the example budget sheet for additional clarification.

*Units = feet, hours, inches, etc. Do not use lump sum unless there is no other way to describe the costs.

**Can include in-kind materials. Justification for in-kind labor (e.g. hourly rates used for calculations). Describe here or in text.

Reminder: Government salaries cannot be used as in-kind match

***The Review Panel suggests that design and oversight costs associated with a proposed project not exceed 15% of the total project budget. If design and oversight costs are in excess of 15%, applications must include a minimum of two competitive bids for the cost of undertaking the project.

****The Review Panel recommends a maximum fencing cost of \$1.50 per foot. Additional costs may be the responsibility of the applicant and/or partners.

MATCHING CONTRIBUTIONS (do not include requested funds)

CONTRIBUTOR	IN-KIND SERVICE	IN-KIND CASH	TOTAL	Secured? (Y/N)
MT DNRC	\$ -	\$ 7,170.20	\$ 7,170.20	Y
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
TOTALS	\$ -	\$ 7,170.20	\$ 7,170.20	

FWP.MT.GOVTHE **OUTSIDE** IS IN US ALL.

Patrick Uthe
3201 Spurgin Road
Missoula, MT 59804
406-542-5532
patrick.uth@mt.gov

November 29, 2018

Montana Fish, Wildlife and Parks
Attn: Michelle McGree
1420 East 6th Ave.
Helena, MT 59620

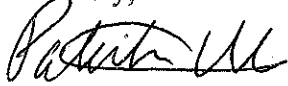
Dear Future Fisheries Panel:

This letter is written in support of the Cottonwood Creek Irrigation Diversion Repair application submitted by Montana DNRC. Cottonwood Creek is ranked as a high priority stream within the Blackfoot River tributary prioritization framework because of its high native species and sport fishery values, as well as the potential to increase cold-water discharge to the Blackfoot River. The drainage is considered a bull trout core area and currently supports resident bull trout in the headwaters. Fluvial and resident westslope cutthroat trout are also present in this drainage. Moreover, significant investments have been made towards restoration actions in Cottonwood Creek over the past decade and the proposed project will add to the benefits of these efforts.

The location of the failed diversion is upstream of the Dryer diversion, which diverts water into FWP's irrigation ditch that irrigates the Blackfoot Clearwater WMA. A previous project was implemented on the Dryer ditch that included reconstruction of the diversion to accommodate fish passage, installation of a fish screen, and installation of an impermeable liner along the entire length of the ditch. FWP converted the water savings attributed to ditch lining into an instream flow lease within Cottonwood Creek to maintain perennial flow for year-round fish passage. The diversion failure at the proposed project location caused Cottonwood Creek to flow into an abandoned channel, which ultimately flowed in the Dryer ditch and caused significant damage to the ditch and the ditch liner. Not only will this project eliminate the old diversion and prevent future failures that could compromise the success of downstream projects, but it will have multiple fisheries benefits. The streambanks surrounding the failed diversion were reinforced with gabions that provided minimal habitat complexity and riparian vegetation. The proposed project will use a fish-friendly stabilization technique that incorporates large woody debris, adding instream complexity to this section that will provide ideal habitat for salmonids. Furthermore, the re-vegetation plan will result in significant shading benefits to this section of stream, which will help moderate temperatures through this alluvial section that has low baseflow in late-summer.

This proposed project is integrated with the Cottonwood Creek irrigation river restoration project and will provide many benefits to this important Blackfoot River tributary. Thank you very much for your consideration of this funding request. Please do not hesitate to contact me if you have any questions or would like additional fisheries information from the proposed project area.

Sincerely,

A handwritten signature in black ink, appearing to read "Patrick Uthe", written over a horizontal line.

Patrick Uthe
Fisheries Biologist